

Key

Practice Test 1

Section 1

You may not use a calculator for items 1-5.

1. Evan has \$5.25, which he plans to use to buy marbles as decorations for his fish bowl. The sign in the store says that 12 marbles cost \$1.50. How many marbles can Evan buy?

A) 18

B) 42

C) 63

D) 95

$$\begin{array}{r} 3.5 \\ 1.5 \overline{) 5.25} \\ \underline{45} \\ 75 \\ \underline{75} \\ 0 \end{array}$$

$$\begin{aligned} 3(12) &= 36 \\ \frac{1}{2}(12) &= 6 + \\ &= 42 \end{aligned}$$

2. Debra needs a new coat, and the clothing store downtown is having a sale. Every item in the store is 30% off the ticketed price. If the coat Debra chooses has a ticket price of \$72.00, how much will she pay for the coat before sales tax?

E) \$21.60

F) \$50.40

G) \$55.40

H) \$64.80

$$\begin{array}{r} 72 \\ \times 0.7 \\ \hline 50.4 \end{array}$$

Debra pays 70%

3. If $x = -3$ and $y = 2$, what is the value of $|2y + 3x|$?

A) 0

B) 5

C) 12

D) 13

$$\begin{array}{r} |2(2) + 3(-3)| \\ |4 + -9| \\ |-5| \end{array}$$

$$I = prt$$

$$I = (1489)(0.03)(2)$$

$$= (1489)(0.06)$$

4. Vadim just deposited \$1,489 in his local bank. He will earn 3% simple interest per year on his money. If he leaves the money in the bank for 2 years, approximately how much money will he have then?

E) \$45

F) \$90

G) \$1,545

H) \$1,580

$$\begin{array}{r} 1489 \\ \times 0.06 \\ \hline 89.34 \\ + 1489.00 \\ \hline 1578.34 \end{array}$$

5. The floor of Dora's bedroom measures 9 feet by 12 feet, and she wants to buy a carpet to cover the entire floor. If the carpet costs \$8.99 per square foot, what will Dora spend, before tax, to carpet her bedroom?

A) \$80.91

B) \$107.88

C) \$377.58

D) \$970.92

$$A = 9 \times 12 = 108$$

$$\begin{array}{r} 108 \\ \times 9 \\ \hline 972 \end{array}$$

You may use a calculator for the rest of the items on this test.

6. David is 2.5 inches shorter than Alicia and 3.5 inches taller than Sandy. Jacinda is taller than Alicia and is 5 feet 8 inches tall. Which of the following is needed to determine David's height?

E) Jacinda's height minus 3.75 inches

F) the order of heights from tallest to shortest

G) the difference in height between Alicia and Sandy

H) the difference in height between Jacinda and Alicia

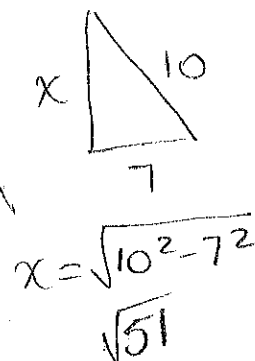
7. Morris is painting the window trim on the outside of his house. His 10-foot ladder reaches just up to the bottom of the window. The bottom of the ladder is 7 feet from the house. To the nearest tenth of a foot, how high up is the window?

A) 7.1 feet

B) 12.2 feet

C) 17 feet

D) 51 feet



8. Sixteen girls will be dancing in Ms. Reppet's dance recital. When the time comes to distribute the leotards, Megan notices that there are 3 red ones, 4 pink ones, 5 blue ones, and 4 green ones. Ms. Reppet hands out the leotards randomly. Megan is secretly hoping for a pink one. What is the probability that Megan will get what she wants?

E) 0.19

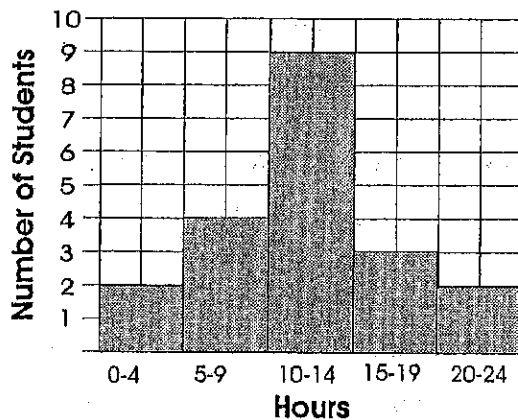
F) 0.25

G) 0.31

H) 0.44

$$\frac{4}{3+4+5+4} = \frac{4}{16}$$

9.



The graph above shows the number of hours per week that the students in Mrs. Contreras' eleventh-grade class spend watching television. How many fewer students watch less than 10 hours of

$$2+4=6$$

television a week compared to those that watch between 10 and 14 hours?

A) 3

B) 5

C) 6

D) 7

10. Ann is creating patterns out of x 's. Every pattern has 3 rows. She is labeling each pattern with a capital letter.

Pattern A

$$\begin{array}{c} \text{X X} \\ \text{X X X} \\ \text{X X} \end{array}$$

Pattern B

$$\begin{array}{c} \text{X X X X} \\ \text{X X X X X} \\ \text{X X X X} \end{array}$$

Pattern C

$$\begin{array}{c} \text{X X X X X X} \\ \text{X X X X X X X} \\ \text{X X X X X X} \end{array}$$

If Ann continues in the same pattern, how many x 's will she use for Pattern F?

E) 25

F) 31

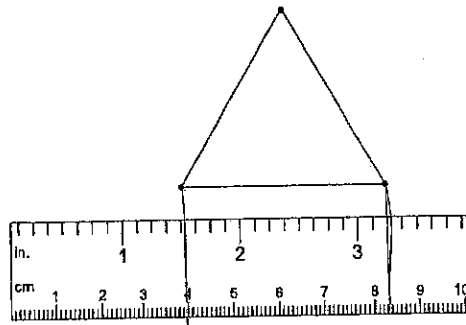
G) 34

H) 37

$$6x + 1$$

$$6(6) + 1$$

11.

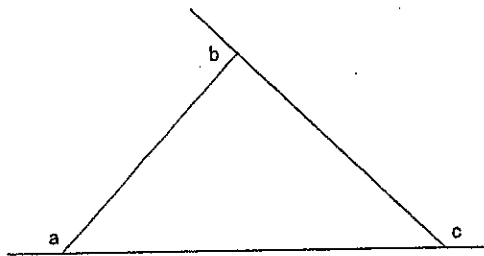


What is the perimeter of this equilateral triangle in centimeters?

- A) 4.2 cm
B) 5.25 cm
C) 10.75 cm

D) 12.6 cm

12. In the following figure, what is the value of $a + b + c$?



- E) 90°
F) 180°
G) 360°
H) 720°

$3 \text{ lines} = 180^\circ \cdot 3 = 540^\circ$
 $180^\circ \text{ in } \Delta$
 $540 - 180 = 360$

13. Gina wants to find out what the most popular brand of popcorn is in her area. Which of these methods would give Gina the most accurate information?

- A) survey random people at the local theater to see who buys popcorn to snack on during movies
B) survey random students at school to see how many prefer popcorn as a snack
C) survey random shoppers at the local grocery to see what brand of popcorn they like best
D) survey random popcorn manufacturers to find who made the most profit over the past year

14. It is not very difficult to add up all the integers from one to ten inclusive:

$1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 = 55$. However, there is a shortcut method worth noting. It involves adding the numbers in pairs starting at the outer ends and working your way in. For example:

$$1 + 10 = 11$$

$$2 + 9 = 11$$

$$3 + 8 = 11$$

and so on.

Because there are 5 such pairs, the sum must equal 11 times 5, or 55.

Using this method, what is the sum of all the even integers from 2 to 100 inclusive?

E) 2,550

F) 2,652

G) 5,100

H) 5,202

sum of each pair = 102

50 #s → 25 pairs

25(102)

2550

15. Order the following from least to greatest:

$2, \frac{4}{3}, \sqrt{5}, \frac{9}{5}$
 $\frac{1}{3}, 2, 2\frac{2}{3}, 1.8$

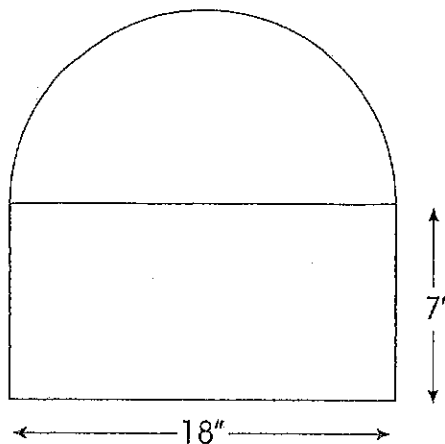
A) $\frac{4}{3}, 2, \sqrt{5}, \frac{9}{5}$

B) $\frac{4}{3}, 2, \frac{9}{5}, \sqrt{5}$

C) $\frac{4}{3}, \frac{9}{5}, 2, \sqrt{5}$

D) $\frac{9}{5}, \frac{4}{3}, 2, \sqrt{5}$

16. Janet is planting a flower garden which has two sections. One section is a rectangle and the other is a semicircle as shown below.



She will plant roses in the semicircular area and marigolds in the rectangular portion. Janet wants to put decorative fencing around the entire outer edge of her garden and also between the roses and marigolds. Which of these is the best estimate for the inches of fencing she will need to buy?

E) 50 in

F) 60 in

G) 70 in

H) 80 in

$$18 + 2(7) + \frac{1}{2}(18)\pi$$

$$18 + 14 + 9\pi$$

17. Which of these is the **range** of the relation shown below?

$\{(2, -5), (0, 4), (-2, -5), (0, 2), (-4, 2)\}$

A) $\{-5, 2, 4\}$

B) $\{-4, -2, 0, 2\}$

C) $\{-5, 0, 2\}$

D) $\{-5, 4\}$

Use the following information to answer

Questions 18–20:

The grades on Mr. Stuart's history exam were as follows:

87, 92, 76, 64, 82, 90, 65, 73, 92, 82, 60, 87, 92, 88, 71, 77, 58, 99, 78, 85, 91, and 95.

18. To the nearest hundredth, what is the mean?

E) 78.54

F) 80.22

G) 81.09

H) 83.37

19. What is the mode?

A) 58

B) 87

C) 92

D) 99

20. What is the probability that a student selected at random will have a score greater than 85?

E) $\frac{9}{22}$

F) $\frac{5}{11}$

G) $\frac{1}{2}$

H) $\frac{7}{11}$

21. Alfonso is riding his bike in the city. He covers 80 city blocks in 20 minutes. Using the generally accepted rule that 20 city blocks equals one mile, what is his speed in miles per hour?

A) 4 mph

B) 6 mph

C) 12 mph

D) 20 mph

22. If m is an even integer and n is an odd integer, which of these **must** be an even integer?

E) $m + n$

F) $m - n$

G) mn

H) $\frac{m}{n}$

23. If $a = 3$ and $b = 4$, what is the value of $\sqrt[3]{(8)^b}$?

A) 2

B) 4

C) 8

D) 16

24. How many solutions are there to the system of equations shown here?

$$3(2x - y = 4) \quad -6x - 3y = 12$$

$$3y - 4 = 6x \quad -6x + 3y = 4$$

E) none

F) one

G) two

H) infinitely many

$$\frac{80 \text{ blocks} \cdot 1 \text{ mile}}{20 \text{ bl}} = 4 \text{ miles}$$

$$\frac{4 \text{ miles}}{20 \text{ min}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} = \frac{12 \text{ miles}}{1 \text{ hr}}$$

25. Alan has been offered two different jobs.

The office job pays \$600 for a 40-hour $\frac{600}{40} = 15$ week, and the factory job pays \$507.50 for a 35-hour week. $\frac{507.5}{35} = 14.5$

- a. Which job offers a higher hourly rate?
b. Alan discovers that he is expected to work 5 hours of overtime per week

$\frac{507.5 + 9.25}{40}$ at the factory job, which makes it a 40-hour week for each job. For this overtime, he will earn \$5.00 more $= (19.5)(5)$ per hour than his regular hourly rate at the factory. Which job should

Alan take?

The factory job will result in \$605/week or \$15.125/hr with the overtime.

The office job will remain at the \$600/week or \$15/hr.

If he is basing his decision on the \$ earned, he should take the factory job.

Section 2

26. The distance from the earth to the moon is approximately 239,000 miles. Using scientific notation of the form $a \times 10^n$, where $1 \leq a \leq 10$ and n is an integer, what is the value of a ?

A) 0.239

B) 2

C) 2.39

D) 5

27. Estimate between which two integers

$\sqrt{149}$ lies.

E) 10 and 11

F) 11 and 12

G) 12 and 13

H) 13 and 14

28. The base of Jason's fish tank is a

rectangle that measures 4 ft by 2 ft. The

tank itself has a height of $1\frac{1}{2}$ ft, but

when Jason fills it with water, he leaves

the top 6 in. $= \frac{1}{2}$ ft empty. How many cubic feet of water will Jason need?

A) 2 cu ft

B) 8 cu ft

C) 12 cu ft

D) 18 cu ft

$$4 \times 2 \times 1$$

$$1\frac{1}{2} - \frac{1}{2} = 1$$

29. Isaac has been hired to paint the long outside wall of the Eastview Factory building. The wall is 110 feet long and 12 feet high, but there are 6 windows and 2 doors that are not going to be painted. Each window measures 4 feet by 3 feet, and each door measures 7 feet by 4 feet. If a can of paint covers 298 square feet, how many cans should Isaac buy?

E) 2

F) 3

G) 4

H) 5

$$110(12) - 6(4)(3) - 2(7)(4)$$

30. Calculate the distance between (3, -4) and (-3, 4)

A) 0

B) 10

C) 100

D) 4

$$\begin{aligned} d &= \sqrt{(3+3)^2 + (-4-4)^2} \\ &= \sqrt{36 + 64} \\ &= \sqrt{100} \end{aligned}$$

31. Phil has 5 different colored T-shirts, and he plans to wear a different one each of the 5 school days next week. How many different options are there for the order in which Phil can wear his T-shirts?

E) 1

F) 5

G) 10

H) 120

$$\begin{aligned} 5! &= 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 \\ &= 20 \cdot 6 \end{aligned}$$

32. Judy is planning to build two volcanoes for a science project, one bigger than the other. When the project is finished, she wants the volcanoes to be two similar cones with heights of 20 inches and 12 inches. If the circumference of the base of the smaller cone is 9π , what is the circumference of the base of the larger cone (to the nearest tenth)?

A) 15.7

B) 23.6

C) 37.7

D) 47.1

$$\frac{12}{20} = \frac{9\pi}{x}$$

$$12x = 180\pi$$

$$x = 15\pi$$

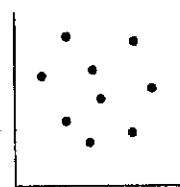
$$12 \overline{) 180} \begin{array}{r} 15 \\ \underline{12} \\ 60 \end{array}$$

$$15 \overline{) 31} \dots \begin{array}{r} 3 \\ \underline{45} \end{array}$$

33. Which of the following scatter plots could represent two sets of data having a correlation close to 0?

no correlation

B)

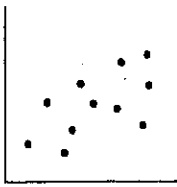


F)

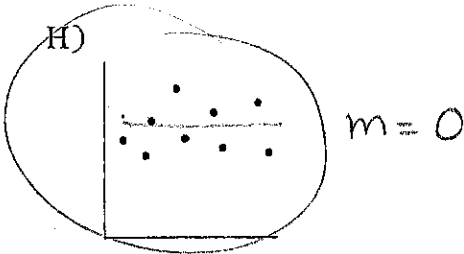


(bad question)

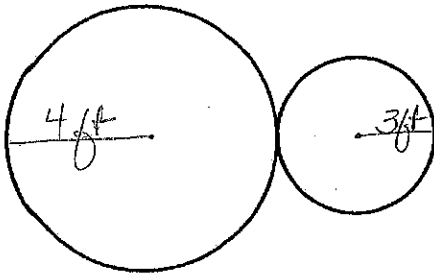
G)



H)



34. Mary, who is ice skating, is making figure 8's that have the shape of two tangent, noncongruent circles as shown below:



If the radius of the smaller circle is 3 feet, and the radius of the larger circle is 4 feet, how many feet (to the nearest foot) does Mary skate when she traces the figure one complete time?

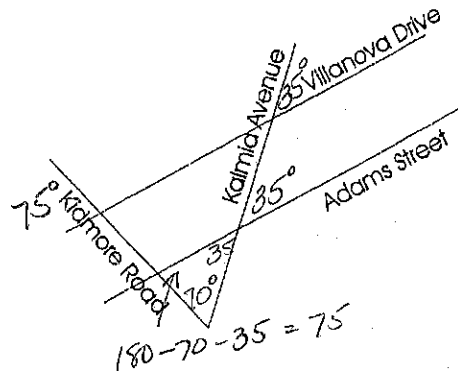
- A) 14 feet
B) 25 feet
C) 38 feet
D) 44 feet

$$C = d\pi$$

$$C = 8\pi + 6\pi = 14\pi$$

$$\frac{14 \times 3.14}{42}$$

35. Mr. Bermudez, an engineer, is planning the layout of the streets for a small housing development in the center of town. One of his sketches is shown below:



Villanova Drive is parallel to Adams Street. Kidmore Road and Kalmia Avenue meet at a 70° angle. The acute angle between Villanova Drive and Kalmia Avenue measures 35° .

How many degrees are there in the acute angle formed by Kidmore Road and Villanova Drive?

- E) 35°
F) 55°
G) 70°
H) 75°

36. Ms. Simon's physics class is doing an experiment involving vertical motion of objects. They are testing the formula $h = vt - 16t^2$, where h is the height of the object at time t , and v is the initial

$$h = vt - 16t^2$$

velocity of the object. When Ruben propels his object upward, he records a height of 12 feet after 2 seconds. What was his initial velocity in feet per second?

$$12 = v(2) - 16(2)^2$$

$$A) 22 \text{ feet per second} \quad 12 = 2v - 64$$

$$B) 24 \text{ feet per second} \quad 76 = 2v$$

$$38 = v$$

$$C) 32 \text{ feet per second}$$

$$D) 38 \text{ feet per second}$$

37. There are 30 students in Mr. Markey's music class. Eighteen play the violin, and 16 play the saxophone. All students play at least one of the two instruments. How many students play both instruments?

$$E) 2$$

$$30 - (18 + 16)$$

$$F) 4$$

$$30 - 34$$

$$-4$$

$$G) 14$$

$$H) 16$$

38. Determine which relation is a function.

$$A) \{(3,1), (4,2), (3,6)\}$$

$$B) \{(0,1), (1,1), (1,0)\}$$

$$C) \{(1,0), (-1,2), (3,4)\}$$

$$D) \{(1,2), (2,2), (3,2)\}$$

39. The Navigators baseball team played 10 games in June of last year. The table below shows the final score of each of those 10 games.

Navigators		Opponents
5	W	2
1	L	3
7	W	6
4	W	0
9	W	1
0	L	7
2	W	1
1	L	4
3	W	1
5	L	6

What is the ratio of games won to games lost for the Navigators?

$$E) \frac{3}{5}$$

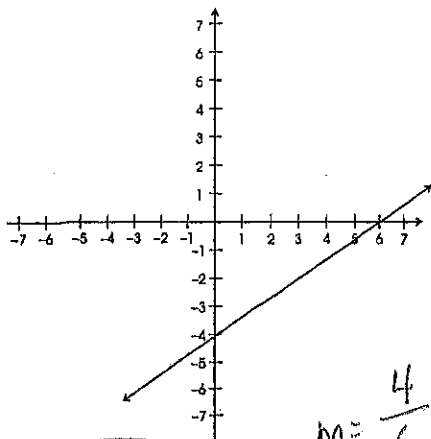
$$\frac{6}{4} = \frac{3}{2}$$

$$F) \frac{2}{3}$$

$$G) \frac{3}{2}$$

$$H) \frac{5}{3}$$

40. Which of the following could be the equation of the line parallel to the one shown below?



$$m = \frac{4}{6} = \frac{2}{3}$$

A) $2x - 3y = 5$

B) $3x - 2y = 5$

C) $x + 2y = 5$

D) $4x + 3y = 5$

$$\begin{aligned} -3y &= -2x \\ y &= \frac{2}{3}x \end{aligned}$$

41. What is the value of p in the equation

$$\sqrt{\frac{1}{81}} = 3^p?$$

E) -4

F) -2

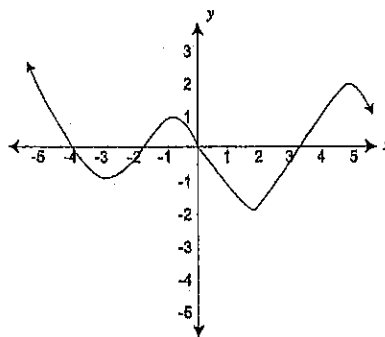
G) 0.2

H) 0.4

$$3^{-\frac{4}{2}} = \sqrt{\frac{1}{81}}$$

$$3^{-2}$$

42. In which interval is the following graph increasing?



A) $-5 \leq x \leq -3$

B) $-3 \leq x \leq 0$

C) $1 \leq x \leq 3$

D) $3 \leq x \leq 5$

43. Sarah is filling out an application form

to join the track team at school. One thing she needs to write down is her walking rate in miles per hour. She knows that she walks from her house to her friend Sadie's house, a distance of 3.2 kilometers (km), in 30 minutes. If 1 km equals approximately 0.6 mile, what is Sarah's walking rate in miles per hour?

E) 1.92 mph

F) 3.84 mph

G) 5.33 mph

H) 10.7 mph

$$\frac{3.2 \text{ km}}{30 \text{ min}} \cdot \frac{0.6 \text{ mi}}{1 \text{ km}} \cdot \frac{60 \text{ min}}{1 \text{ hr}}$$

44. Sylvia has a project that requires 20 hours of work. She completes $\frac{1}{5}$ of the project on Monday and then works 3 hours a day on each of the next 2 days. On Thursday, Sylvia determines how much of the project is still incomplete, and she vows to do half of the remainder on Thursday and the final portion on Friday. How many hours will she work on Friday?

A) 4 hours
 B) 5 hours
 C) 7 hours
 D) 10 hours

45. Mr. Bryan is starting a small business in his home. He makes buttons to sell to school and community groups. Every order he gets requires adjustments to his button-making machine. These adjustments cost him \$50.00. In addition to the \$50.00 adjustment charge, it costs him \$2.50 to make each button. If he wishes to make \$300 on an order for 200 identical buttons, what should he charge per button, to the nearest penny?

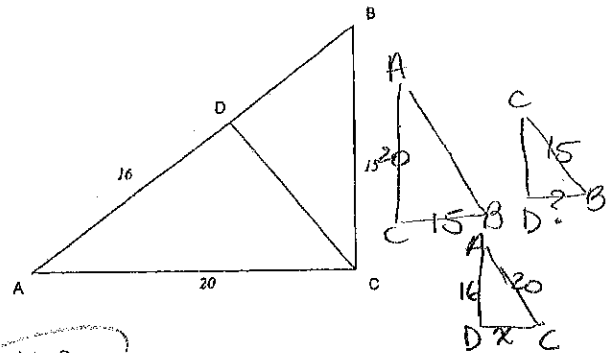
E) \$1.25
 F) \$2.00
 G) \$3.50
 H) \$4.25

profit = charge - expense
 $300 = 10(200) - [50 + (2.5)(200)]$
 $300 = 2000 - 550$
 $850 = 2000$

46. Triangles ABC and CBD are similar.

$AC = 20$, $AD = 16$, and $BC = 15$.

What is the length of BD ?



A) 9
 B) 10
 C) 12
 D) 25

$$\frac{20}{16} = \frac{15}{x}$$

$$20x =$$

47. Mr. Timm is teaching his science class about temperature measurements by using both the Celsius (centigrade) and Fahrenheit scales. He puts the following formula for converting Celsius to Fahrenheit on the board:

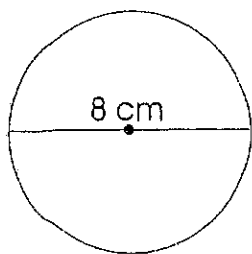
$$F = \frac{9}{5}C + 32$$

What will be the Fahrenheit temperature when the Celsius reading is 21° ?

E) $19.8^\circ F$
 F) $53.4^\circ F$
 G) $69.8^\circ F$
 H) $95.4^\circ F$

$F = \frac{9}{5} \cdot 21 + 32$

48.



$$A_o = r^2 \pi$$

$$A_o = 4^2 \pi = 16\pi$$

$$\approx$$

The area of a square has the same area as the circle above. What is the length of each side of the square to the nearest whole centimeter?

A) 7 cm

B) 8 cm

C) 16 cm

D) 32 cm

49. At the boat rental dock in Lake View

Park, the sign says that each boat can hold a maximum weight of 500 pounds.

The three people already in the boat have an average weight of 120 pounds. If a fourth person also wants to get into the boat, what could be the maximum weight of that person in pounds?

E) 120

F) 140

G) 360

H) 380

$$(120)3 = 360$$

$$500 - 360$$

$$140$$

50. Lauren has several packages that she

needs to mail. For each package the cost is \$2.50 for the first 3 ounces and \$0.50 for each additional ounce.

$$y = 2.5 \text{ for } 0 < x < 3$$

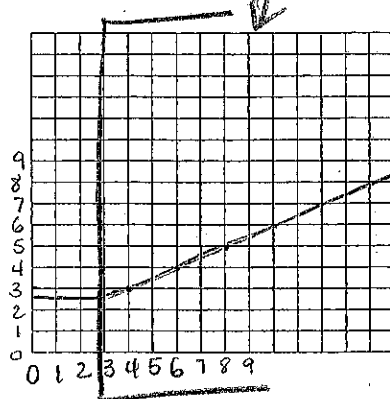
- a. Using x to represent the number of ounces per package and y to represent the cost in cents to mail the package, write an equation for y in terms of x .

$$y = 2.5 + (x - 3)0.5$$

$$y = 2.5 + 0.5x - 1.5$$

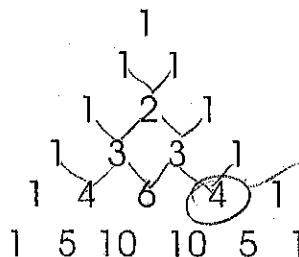
$$y = \frac{1}{2}x + 1 \text{ for } x \geq 3$$

- b. Using the coordinate axis in your answer booklet, graph the equation for $x \geq 3$.



Section 3

51. French mathematician Blaise Pascal created the numerical triangle shown below.



sum of two #s above

More rows can be added following the established pattern. What is the middle number in the next row?

A) 10

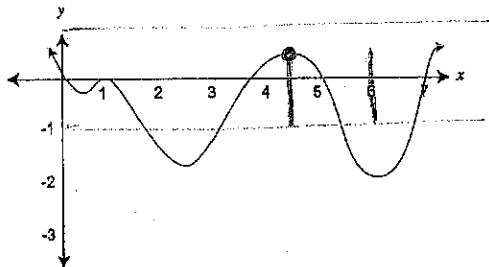
B) 15

C) 16

D) 20

$$\begin{array}{r} 10 + 10 \\ \hline 20 \end{array}$$

52. What is the maximum point on the line graphed below between the interval $4.5 \leq x \leq 6$?



E) (6, -2)

F) (5, 0)

G) (4.5, 0.5)

H) (4.5, 1)

53. Mrs. Lipinski decided to add 2 bonus points to each score on her list. Which of the following measures will remain unaffected by the addition of these points?

A) range

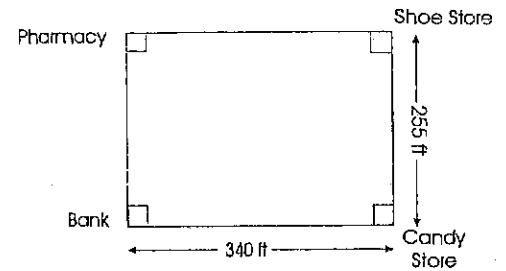
B) mean

C) median

D) mode

The difference between the high & low will stay the same.

54. The village green in the small town down by Black Creek is shaped like a rectangle as shown in the diagram below:



What is the shortest distance from the shoe store to the bank in feet?

E) 225 ft

F) 425 ft

G) 510 ft

H) 595 ft

$$d = \sqrt{255^2 + 340^2}$$

55. Mimi wants to visit her friend Kathy, who lives on Lee Street. All the houses on Lee Street look identical from the outside. Mimi has forgotten Kathy's house number, but she does remember that it has 2 digits and is not bigger than 50. How many different possibilities are there for the number for Kathy's house?

A) 20

B) 25

C) 40

D) 41

$$10 - 20 \rightarrow 11$$

$$21 - 30 \rightarrow 10$$

$$31 - 40 \rightarrow 10$$

$$41 - 50 \rightarrow 10$$

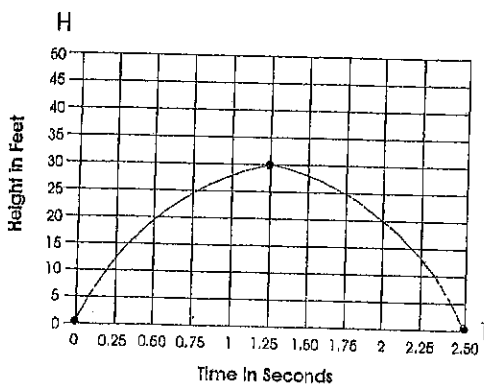
56.

Stem	Leaves
97	9
98	1 4 6 6 6 7 (8)
99	0 0 1 3
100	1 2
101	0

The stem and leaf plot above shows the temperature readings for the patients in Nurse Rosa's care at Liberty Hospital yesterday morning. The stem gives the integer portion of the temperature reading, and the leaves are the tenths. What is the median temperature reading for Nurse Rosa's patients?

- E) 98.6
 (F) 98.8
 G) 99.0
 H) 99.1

57. The trajectory of a ball is shown by the parabolic function drawn on the axes below.



The horizontal axis represents the number of seconds the ball has been in the air, and the vertical axis represents the height the ball has reached at the corresponding time. How many seconds did it take for the ball to reach its maximum height?

- A) 1
 (B) 1.25
 C) 2.50
 D) 30

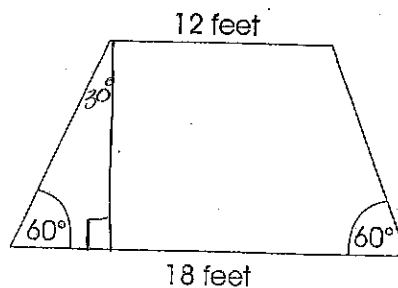
58. Pat made a long-distance phone call for which she was charged 4¢ a minute and a connection fee of 27¢. If Pat paid 99¢ for the call, how many minutes did she talk?

- (E) 18
 F) 23
 G) 25
 H) 72

$$\begin{array}{r} 99 - 27 \\ \hline 4 \end{array}$$

$$\begin{aligned} 27 + 4m &= C \\ 27 + 4m &= 99 \\ 4m &= 72 \\ m &= 18 \end{aligned}$$

59. Amanda has a swimming pool in the shape of a trapezoid.



30-60-90 special rt Δ gives us width for perimeter
 ∴ area can also be computed

We do not know the depth of the pool, so cannot determine volume.

Which of the following questions **cannot** be answered using the given information?

- A) What is the width of the pool?
- B) What is the perimeter of the pool?
- C) What is the volume of the pool?
- D) What is the area of the pool?

60. Factor completely $x^2 - x - 6$

- E) $(x - 3)(x + 2)$
- F) $(x + 3)(x - 2)$
- G) $(x - 6)(x - 1)$
- H) $(x + 6)(x - 1)$

61. The cost to paint a house **varies directly** with the amount of area to be painted. Using the information in the table, how many cans of paint would be needed to cover an area of 3,000 square feet?

Paint Cans	1	2	4	8	x	16
Painted Area (sq. ft.)	240	480	960	1,920	3,000	3,840

- A) 12.5
- B) 14
- C) 14.5
- D) 15

$$\frac{1}{240} = \frac{x}{3000}$$

$$x = 12.5$$

62. Five friends are collecting cans for the food pantry of their local church. The chart below shows the number of cans collected by each person.

Marvin	127
Sally	143
Will	108
James	119
Ella	103

600

They have been told to set up 35 bags with an equal number of cans in each bag. What is the fewest number of additional cans that must be collected to make this possible?

E) 15

F) 25

G) 30

H) 35

$$\frac{600}{35} = 17 \frac{5}{35}$$

to fill one more bag we need 35-5

63. Charles has \$5.50 more than Ali. *C = 5.5 + A*

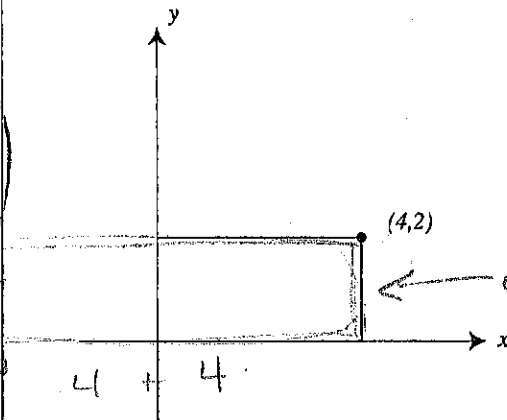
A + C = 27 Together they have \$27.00. Which of the

following shows a system of equations that could be used to determine how much money each boy has?

A) $A = 5.50 + C$ $A = C + 27$ B) $A = 5.50 + C$ $C \times A = 27$ C) $C = 5.50 + A$ $C = A \times 27$ D) $C = 5.50 + A$ $C + A = 27$

A = Ali's \$
C = Charles's \$

64. If this rectangle is rotated 360° about the y-axis, which of the following dimensions will the resulting cylinder have?



E) diameter of 4 and height of 2

F) diameter of 4 and height of 4

G) diameter of 8 and height of 2

H) diameter of 8 and height of 4

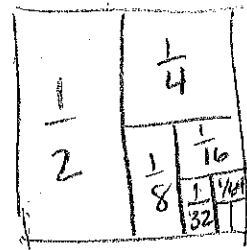
65. What is the sum of the following infinite series?

$$2 + 1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \dots$$

A) 4

B) $4\frac{1}{2}$

C) 5

D) $5\frac{1}{2}$ 

66. Which of the following expressions

reduces to $\frac{2x^2z}{3y^3}$?

E) $\frac{24x^5y^2z^2}{36x^3y^5z}$

F) $\frac{12x^3y^3z^2}{18x^2y^9z}$

G) $\frac{8x^6z}{12x^3y^3z}$

H) $\frac{15x^3z^2}{24xy^3z}$

simplify first look @ # part then look @
 $\frac{2}{3}$
 $\frac{2x}{3}$ no
 $\frac{2x^3}{3}$ no
 $\frac{5}{8}$ no

67. Solve for x : $x^2 - 4x = 12$

A) (12,16)

B) (6,-2)

C) (-2,6)

D) (0,4)

$x^2 - 4x - 12 = 0$
 $(x-6)(x+2) = 0$

68. Rita works in a factory where she packs 1-inch cubes into cardboard boxes that measure 10 in by 8 in by 6 in. On her last shift, she packed 8,640 cubes into boxes. How many boxes did she fill?

E) 18

F) 24

G) 360

H) 480

$10 \times 8 \times 6 = 480$

$\frac{8640}{480} =$

69. Aaron, Grant, Valerie, Fred, and Emily are on the prom committee. The group wants to choose a chairperson and an assistant chairperson. In how many different ways can this be done?

A) 5

B) 10

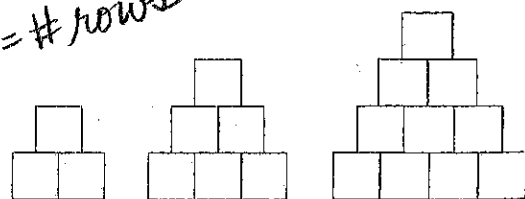
C) 20

D) 25

$5P_2$

70. Five-year-old Alben just got a big box of blocks for his birthday. The blocks have the shape of 1-inch cubes. Alben is building towers of increasing size. The first tower is made of two rows with two blocks on the bottom row and one block on top. The second tower has three rows with three blocks in the bottom row, two in the middle row, and one block on top. The first three towers are shown below.

$n = \# \text{ rows}$



If Alben continues in the same pattern, how many blocks will he use for the tower that is 1 foot high? = 12 in

E) 60

F) 66

G) 78

H) 91

$\therefore 12 + 11 + 10 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1$
 $= 13 \cdot 6$

$= \frac{n}{2} (n+1)$

71. The elevator in the town hall building in Burlington holds approximately 10 adults or 15 children. If there are already 6 adults in the elevator, what is the maximum number of children who should be allowed to enter the elevator at the same time?

A) 4

B) 6

C) 7

D) 9

$$\frac{6}{10} = \frac{3}{5} \text{ full of adults}$$

 $\frac{2}{5} \text{ left for children}$

$$\frac{2}{5} = \frac{x}{15}$$

72. Selvi is in charge of printing up tickets for the school play. The printer tells her that the first 50 tickets will cost \$35, but after that she can order additional packets containing 25 tickets for \$9.95 per packet. If Selvi needs 200 tickets, how much will she spend?

E) \$64.85

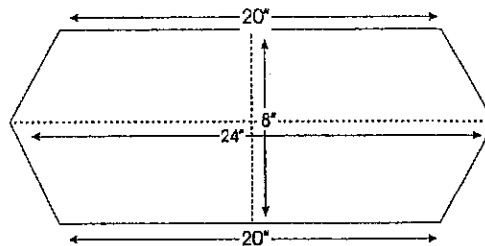
F) \$79.60

G) \$94.70

H) \$114.60

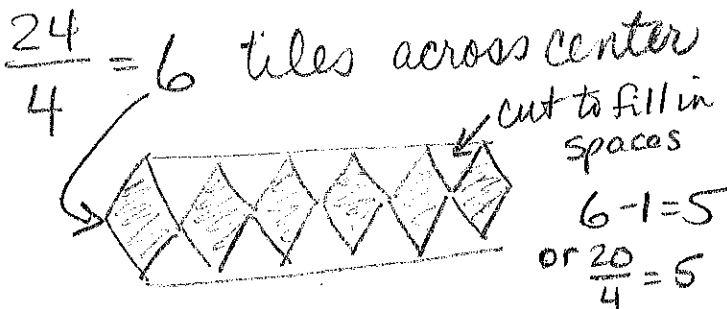
$$35 + \frac{150}{25}(9.95)$$

73. As part of a remodeling project, Walter is planning to install new tiles on the wall behind his kitchen sink. The area where he wants to tile is a hexagon as shown below:



Walter has chosen rhombus-shaped tiles with diagonal measures of 4 in. and 8 in. He also purchases a tool that can cut the tiles in half along the shorter diagonal.

How many tiles will Walter need?



$$6 + 5 = 11 \text{ tiles}$$

